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APHIS 91-28
September 1975

OF AGRICULTURE
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DEC 15 '78

NATIONAL TICK SURVEILLANCE PROGRAM

Calendar Year 1974

Animal and Plant Health Inspection Service

UNITED STATES DEPARTMENT OF AGRICULTURE

NATIONAL TICK SURVEILLANCE PROGRAM

Calendar Year 1974

During calendar year 1974, the collection and submission of ticks from native and imported animals and plant and animal materials were 45 percent more than in 1973. There were 11,042 collections in 1974, compared with 7,613 in 1973 and 3,645 in 1972.

BOOPHILUS TICK SITUATION IN TEXAS

A total of 87 *Boophilus* infestations were disclosed in Texas during calendar year 1974. As in the past, the majority of these infestations were found in the permanent buffer zone along the Rio Grande River separating Texas from Mexico. There were three areas of infestation outside the buffer zone. One was a small area adjacent to the buffer zone in Starr and Zapata Counties. The second area was larger but still adjacent to the buffer zone near Carrizo Springs. The third area, which was completely separated from the permanent buffer zone, was located near Alice, Texas.

State and Federal personnel continued intensified tick surveillance activities in Texas during 1974. A total of 5,192 tick collections was made from all hosts in 1974 compared to 6,041 collections in 1973 and 2,268 collections in 1972. There is no reason to believe that the *Boophilus* infestations in Texas have not been contained in the permanent buffer zone and in the three quarantine areas in southern Texas.

AMBLYOMMA VARIEGATUM FOUND IN PUERTO RICO

The tropical bont tick, *Amblyomma variegatum*, was found on livestock at Rio Abajo, Cidra, Puerto Rico in June 1974. A subsequent survey revealed that the tick was established on over 30 premises in the municipalities of Cidra, Cayey and Caguas, which are located approximately 25-30 miles south of San Juan. During 1974, 68 submissions of *A. variegatum* were made from cattle and horses in the infested areas. Thorough investigation of the infestations seems to indicate that the tick could have been in Puerto Rico for 2½-3 years prior to the time it was first found. The tropical bont tick was not known to exist in Puerto Rico prior to June 1974. It was found on St. Croix, U.S. Virgin Islands in 1967 and was subsequently eradicated in 1970 following an intensive eradication program. A reinfestation was disclosed in March 1971.

Originally from Africa, the tropical bont tick was first reported from the Western Hemisphere (Antigua) by C. A. Barber in 1895. At that time the natives of Antigua believed it had been introduced 30 to 40 years previously with cattle imported from Senegal. It was later reported from St. Kitts and Guadeloupe.

The tropical bont tick is a serious pest of livestock with a wide host range. The adult and nymphal stages are commonly found on cattle, sheep, goats, and horses. The larval stage prefers birds and small mammals but will attack man. This tick is striking because of the large size attained by the fully engorged female and the beautiful ornamentation of the male. The fully engorged female ingests approximately 10 times the volume of blood as a fully fed *Boophilus* female. In addition to producing large, painful wounds

and sucking much blood, the tropical bont tick is known to transmit *Rickettsia ruminantium* which produces heartwater in cattle, sheep, and goats. It also transmits the virus of Nairobi sheep disease. Fortunately none of the disease agents has been found associated with the tropical bont tick in Puerto Rico.

COLLECTION OF TICKS FROM WHITE-TAILED DEER

The dramatic increase in the number of tick collections from native wildlife, especially white-tailed deer, is the direct result of effort between 12 southeastern wildlife conservation departments (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia); the Southeastern Cooperative Wildlife Disease Study, Department of Parasitology, College of Veterinary Medicine, University of Georgia, Athens; and Emergency Programs of Veterinary Services, APHIS, USDA, Hyattsville, Maryland.

The survey of the ectoparasites of wildlife populations provides an excellent method of determining if *Boophilus* spp., *Amblyomma variegatum* or other exotic ticks have been introduced into highly vulnerable areas in which the usual livestock tick surveys have not been adequate. Deer serve as hosts for many of the same ticks as livestock but often frequent areas not accesible to livestock.

ARGAS MINIATUS PRODUCES HIGH DEATH LOSSES IN PUERTO RICO

In April 1974 high death losses were reported in a flock of laying chickens on a poultry farm located in southwestern Puerto Rico. The poultry farm contained 7,100 birds in four separate houses. Losses occurred in only two of the houses. The two affected poultry houses contained a total of 4,000 birds, of which 1,200 died, almost all with paralytic signs.

On February 28, 1974, the 4,000 21-week old pullets were placed in the two poultry houses. All the pullets were purchased from the same source. The first pullets started dying of paralysis about 4 days after being placed in the poultry houses. By March 10, almost 900 birds had died. By the third week in April, approximately 1,200 birds had died. Death losses were stopped by individually treating the birds and spraying the poultry houses with approved pesticides. The two poultry houses in which the affected birds were confined were heavily infested with all stages of *Argas miniatus*. The stricken birds were also heavily infested with this tick, especially the larval stage.

The above case history closely parallels the clinical picture observed in pullets placed in poultry houses heavily infested with *Argas persicus*. Similar observations and mortality rates have been encountered in Maryland where *A. persicus* was incriminated. The classical clinical picture develops in a situation where young, susceptible birds are placed in old, heavily infested poultry houses. The young birds are immediately attacked by all stages of *Argas*, but it is apparently the larval stage which produces the paralysis. Losses may exceed 80 percent, but birds that survive apparently develop a resistance to later attacks by the ticks since paralysis is not common in older birds which survive the initial encounter with *Argas*. Light infestation with *Argas* probably also leads to the development of resistance in susceptible chickens. Death losses become dramatic when susceptible birds are placed in situations where they are overwhelmed with massive infestations of ticks, especially if the poultry house has been vacant for some weeks or months and the ticks are hungry. The birds do not often recover once paralysis has developed, but losses may be stopped in yet unaffected birds by thoroughly treating them and the poultry house with approved pesticides.

TICK TRAINING COURSE IN GUATEMALA

A training course on identification of ticks and methods of eradicating livestock ticks was conducted in Guatemala City, Guatemala, May 20 through 24, 1974. The course was sponsored by Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA). This is a regional organization that works to

protect and promote the health of the plant and animal industries of Central America, Mexico, and Panama.

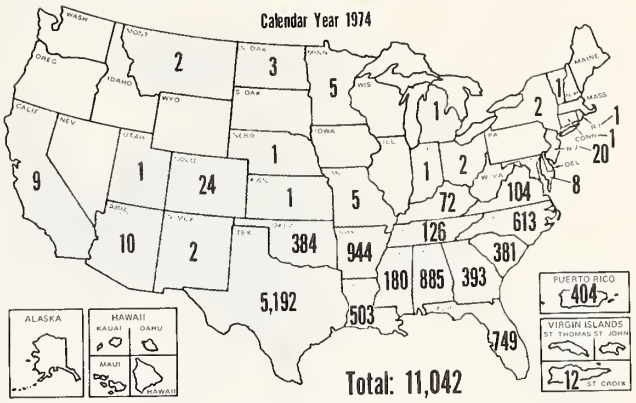
The meeting was held at the College of Veterinary Medicine of the University of San Carlos of Guatemala in collaboration with the United States Department of Agriculture (Veterinary Services), Secretary of Agriculture and Livestock of Mexico, and the faculty of the Veterinary College. Twenty-two veterinarians were in attendance from the following countries: Guatemala, Costa Rica, El Salvador, Nicaragua, Honduras, and Panama. The purpose of the course was to provide information on livestock ticks and to simulate an interest in a *Boophilus* tick eradication program in Central America and Panama. A similar livestock tick training course was conducted in Venezuela in March 1975.

REPORT OF ALL TICKS COLLECTED
CALENDAR YEAR 1974

STATE	TOTAL	CATTLE	DOGS	HORSES & MULES	ZOO ANIMALS & MISC.	NATIVE WILDLIFE	ANIMALS FOR OFFERED ENTRY
TOTAL	11042	4998	237	585	131	5019	72
Alabama	885	11	8		6	860	
Alaska							
Arizona	10	4		1			5
Arkansas	944	41	1	3	3	896	
California	9	3	1			1	4
Colorado	24		19		2		3
Connecticut	1		1				
Delaware							
Florida	749	30	3	160	4	536	16
Georgia	393	2				391	
Hawaii							
Idaho							
Illinois							
Indiana	1	1					
Iowa							
Kansas	1		1				
Kentucky	72	1			1	70	
Louisiana	503					501	2
Maine							
Maryland	8		2		6		
Massachusetts							
Michigan	1	1					
Minnesota	5		1		4		
Mississippi	180	4				176	
Missouri	5	5					
Montana	2			2			
Nebraska	1			1			
Nevada							
New Hampshire							
New Jersey	20		3	1	1		15
New Mexico	2	1		1			
New York	2				2		
North Carolina	613	1	9		11	591	1
North Dakota	3		2		1		
Ohio	2	1	1				
Oklahoma	384	13	1		2	368	
Oregon							
Pennsylvania							
Rhode Island	1		1				
South Carolina	381				7	374	
South Dakota							
Tennessee	126		1		2	123	
Texas	5192	4658	158	261	59	30	26
Utah	1	1					
Vermont	1				1		
Virginia	104	1			1	102	
Washington							
West Virginia							
Wisconsin							
Wyoming							
Puerto Rico	404	209	24	155	16		
Virgin Islands	12	10			2		

TICK COLLECTIONS FROM ALL HOSTS

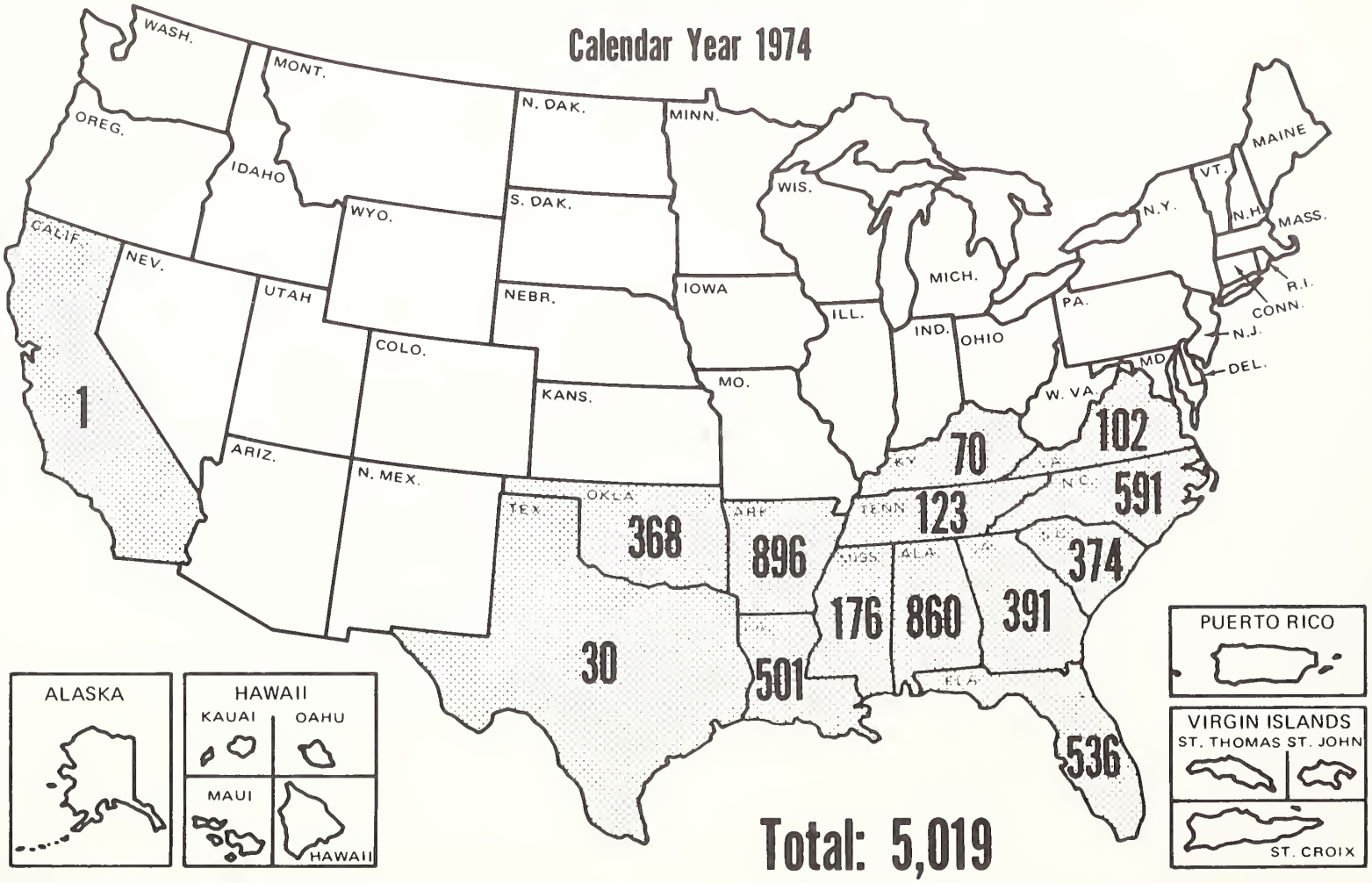
Calendar Year 1974



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

TICK COLLECTIONS FROM NATIVE WILDLIFE

Calendar Year 1974



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974 | HOST: NATIVE WILDLIFE

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CALENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPIDUS	DERMACENTOR SILVARUM (= D. SENILIS AUCT. NON FABR.)	DERMACENTOR NIGROLINEATUS	DERMACENTOR VIRGIS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	5019	993			204	46					7		524			15		5		1	3185	39					
Alabama	860	225D			12D								108D								515D						
Alaska																											
Arizona																											
Arkansas	896	112D											126D								658D						
California	1																			1F							
Colorado																											
Connecticut																											
Delaware																											
Florida	536	112D			137D	46D[g]										2D					232D	7D[a]					
Georgia	391	111F			4D								2D								274D						
Hawaii																											
Idaho																											
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky	70	7D											63D														
Louisiana	501	31D																			470D						
Maine																											
Maryland																											
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi	176	31D			4D								6D								135D						
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico																											
New York																											
North Carolina	591	140D											47D					2R			40DD	1R[d] 1RC[t]					
North Dakota																											
Ohio																											
Oklahoma	368	65D			1D						1D		40D								261D						
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina	374	114D			43D								7D			1D					179D	30D[a]					
South Dakota																											
Tennessee	123	5D											110D								8D						
Texas	30	1D 1CO 1RC			2 D 1ML						6D		3D			9CD 1J 1ML 1BC		3R									
Utah																											
Vermont																											
Virginia	102	37D											12D								53D						
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico																											
Virgin Islands																											

ANH FORM 5-55 MAY 1971 REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE USDA-ARS

Key to Host

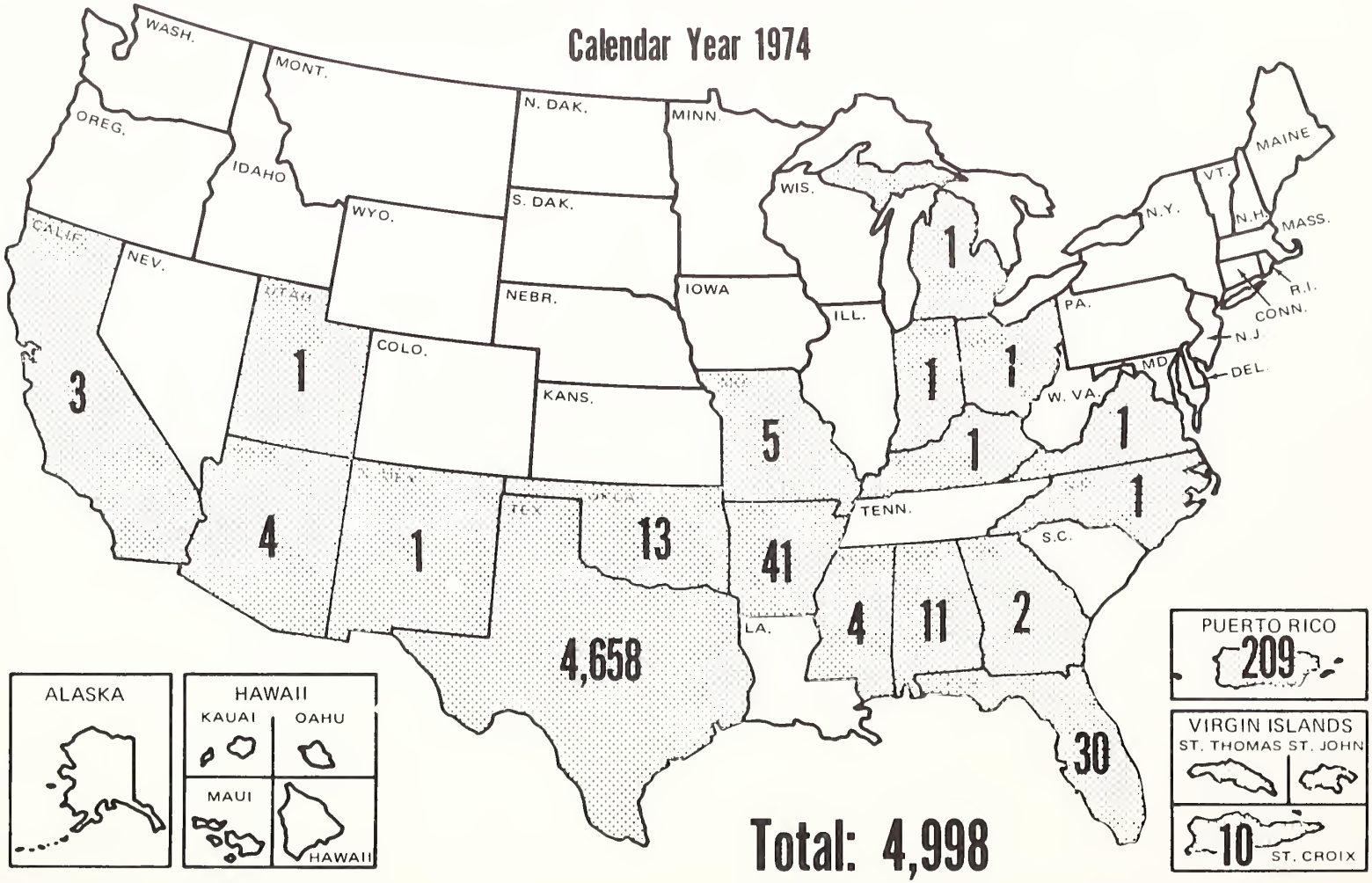
BC Bobcat
CO Coyote
D Deer
F Fox
J Javalina
ML Mountain Lion
R Rabbit
RC Raccoon

Key to Species

a Ixodes affinis
d Ixodes dentatus
g Amblyomma tuberculatum
t Ixodes texanus

TICK COLLECTIONS FROM CATTLE

Calendar Year 1974



Total: 4,998

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974

HOST: CATTLE

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	HAEMAPHYSALIS LEPORIS-PALUSTRIS	DERMACENTOR SYLVARUM (TAMKS)	DERMACENTOR TUBERCULATUS	DERMACENTOR VARIABILIS	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	4998	2147	565	13	653	237		16	61	11	228		31	145		605	10	11	1		44	2		200	18		
Alabama	11	2			5								1			3											
Alaska																											
Arizona	4										4																
Arkansas	41	38			1																1			1			
California	3	1			1																			1			
Colorado																											
Connecticut																											
Delaware																											
Florida	30	1			24									1							4						
Georgia	2	1			1																						
Hawaii																											
Idaho																											
Illinois																											
Indiana	1															1											
Iowa																											
Kansas																											
Kentucky	1	1																									
Louisiana																											
Maine																											
Maryland																											
Massachusetts																											
Michigan	1										1																
Minnesota																											
Mississippi	4	1			1											2											
Missouri	5	4														1											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico	1										1																
New York																											
North Carolina	1	1																									
North Dakota																											
Ohio	1															1											
Oklahoma	13	7			4																			2			
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina																											
South Dakota																											
Tennessee																											
Texas	4658	2089	565	13	616	150 n 22 n		16	52	11	221		30			597	1 p 9	11	1		39	2		196	17		
Utah	1										1																
Vermont																											
Virginia	1	1																									
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico	209					65 v								143											1		
Virgin Islands	10								9					1													

ANH FORM 5-55 MAY 1971 REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE

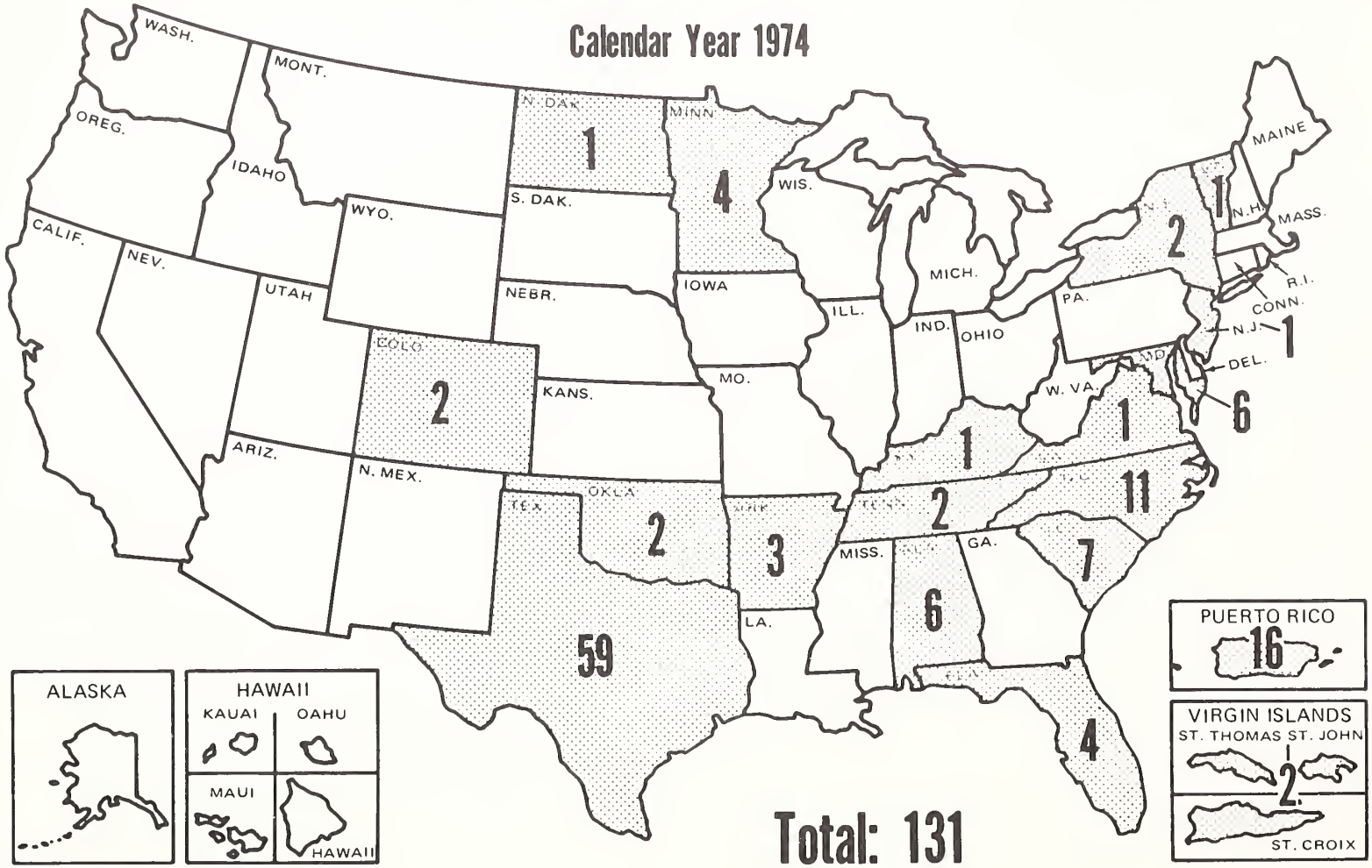
USDA-ARS

Key to Species

n Amblyomma inornatum
p Dermacentor parumapertus
v Amblyomma variegatum

TICK COLLECTIONS FROM ZOO ANIMALS AND MISCELLANEOUS HOSTS

Calendar Year 1974



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974

HOST: ZOO ANIMALS and MISCELLANEOUS HOST (Sheep, Human etc.)

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SPICATUS (=ANDERSONI, VENUSTUS & OCCIDENTALIS)	DERMACENTOR SILVARUM	DERMACENTOR TEXENS	DERMACENTOR VARIABILIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES CONEPEL	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	131	38	4		2	18	7		2		1	2		12		31					3			1	8	1	
Alabama	6					1H										1Q 3H									1X		
Alaska																											
Arizona																											
Arkansas	3	1Y 2Q																									
California																											
Colorado	2											1H 1Q															
Connecticut																											
Delaware																											
Florida	4															1Y					1Y 2C						
Georgia																											
Hawaii																											
Idaho																											
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky	1															1H											
Louisiana																											
Maine																											
Maryland	6	1H					5CH																				
Massachusetts																											
Michigan																											
Minnesota	4					1T[m]										3H											
Mississippi																											
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey	1															1X											
New Mexico																											
New York	2	1C				1A[f]																					
North Carolina	11	2H				1RH[c] 1RH[v]										1Y2H 1C1X										1RH[cc]	1RH[y]
North Dakota	1															1H											
Ohio																											
Oklahoma	2	1S														1Q											
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina	7	2Y 2Q														1Y 2Q											
South Dakota																											
Tennessee	2	1H				1E[th]																					
Texas	59	2Y10H 11Q1G	2Q1H 1X		1Q 1H	10H 1Q	1CH[s]				1Q					3H4Q 3Y								1S	1H 4Q		
Utah																											
Vermont	1															1C											
Virginia	1	1Y																									
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico	16					1Q[v]	1CH[b]							12Q											2Q		
Virgin Islands	2								2G																		

ANH FORM 5-55 MAY 1971 REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE

USDA-ARS

Key to Host

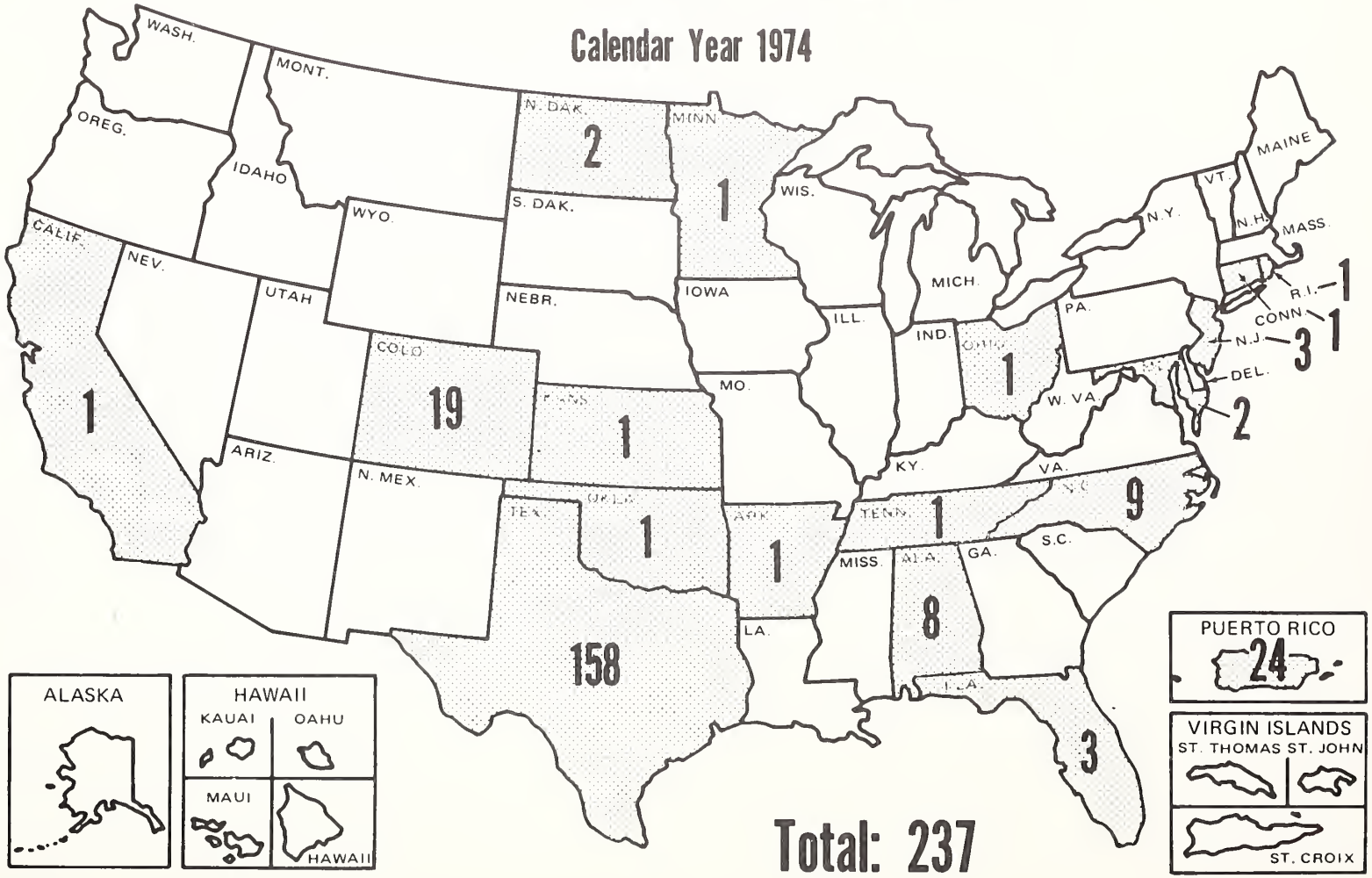
BA Boa Constrictor
C Cat
CH Chicken
E Elephant
G Goat
H Human
Q Host not given
RH Rhinoceros
S Sheep
T Tortoise
X Inanimate Object
Y Swine

Key to Species

a Amblyomma gemma
b Argas miniatus
cc Rhipicephalus pulchellus
f Amblyomma dissimile
m Amblyomma marmoreum
s Argas sanchezi
th Amblyomma tholloni
v Amblyomma variegatum
y Hyalomma truncatum

TICK COLLECTIONS FROM DOGS

Calendar Year 1974



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974

HOST: DOGS

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM	DERMACENTOR VARIABILIS & D. NITENS	DERMACENTOR INGOLIMANUS	DERMACENTOR VITERS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES CODMEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	237	34			10	8											60			1		10	5		5	104		
Alabama	8	2															4									2		
Alaska																												
Arizona																												
Arkansas	1																1											
California	1																									1		
Colorado	19	1																					4[d]		3	11		
Connecticut	1																					1						
Delaware																												
Florida	3				1												1					1						
Georgia																												
Hawaii																												
Idaho																												
Illinois																												
Indiana																												
Iowa																												
Kansas	1																1											
Kentucky																												
Louisiana																												
Maine																												
Maryland	2																1									1		
Massachusetts																												
Michigan																												
Minnesota	1																									1		
Mississippi																												
Missouri																												
Montana																												
Nebraska																												
Nevada																												
New Hampshire																												
New Jersey	3																3											
New Mexico																												
New York																												
North Carolina	9	2															7											
North Dakota	2																2											
Ohio	1																						1					
Oklahoma	1																									1		
Oregon																												
Pennsylvania																												
Rhode Island	1																					1						
South Carolina																												
South Dakota																												
Tennessee	1																									1		
Texas	158	29			9	2[n] 1[m] 5											40			1		7			2	62		
Utah																												
Vermont																												
Virginia																												
Washington																												
West Virginia																												
Wisconsin																												
Wyoming																												
Puerto Rico	24																									24		
Virgin Islands																												

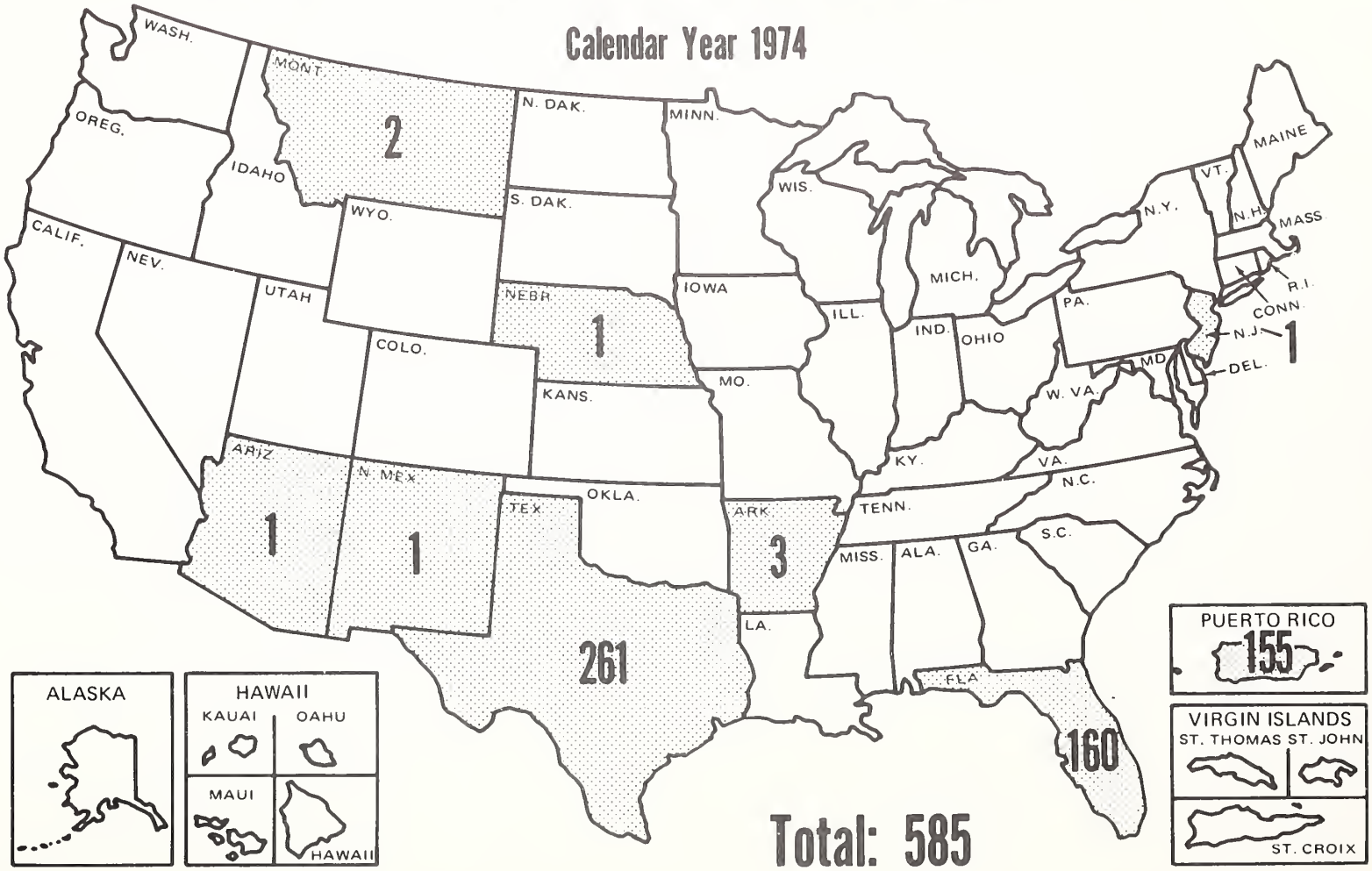
ANH FORM 5-55 MAY 1971 REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE USDA-ARS

Key to Species

d Ixodes kingi
m Amblyomma imitator
n Amblyomma inornatum

TICK COLLECTIONS FROM HORSES AND MULES

Calendar Year 1974



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974

HOST: HORSES AND MULES

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CALIFORNICUM	AMBLYOMMA INTEXTUM	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM SILVARUM	DERMACENTOR SILVARUM SP. (VENUSTUS BANKSI)	DERMACENTOR NITEGORA ATLAS	DERMACENTOR NITEALIS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	585	44	35	6	47	10		1	1		20	2	4	253		134		1			14				8	5		
Alabama																												
Alaska																												
Arizona	1																								1			
Arkansas	3	2														1												
California																												
Colorado																												
Connecticut																												
Delaware																												
Florida	160	1			40									100		7					11					1		
Georgia																												
Hawaii																												
Idaho																												
Illinois																												
Indiana																												
Iowa																												
Kansas																												
Kentucky																												
Louisiana																												
Maine																												
Maryland																												
Massachusetts																												
Michigan																												
Minnesota																												
Mississippi																												
Missouri																												
Montana	2											2																
Nebraska	1															1												
Nevada																												
New Hampshire																												
New Jersey	1										1																	
New Mexico	1										1																	
New York																												
North Carolina																												
North Dakota																												
Ohio																												
Oklahoma																												
Oregon																												
Pennsylvania																												
Rhode Island																												
South Carolina																												
South Dakota																												
Tennessee																												
Texas	261	41	35	6	7	8		1	1		18		4			125		1			3				7	4		
Utah																												
Vermont																												
Virginia																												
Washington																												
West Virginia																												
Wisconsin																												
Wyoming																												
Puerto Rico	155					2v								153														
Virgin Islands																												

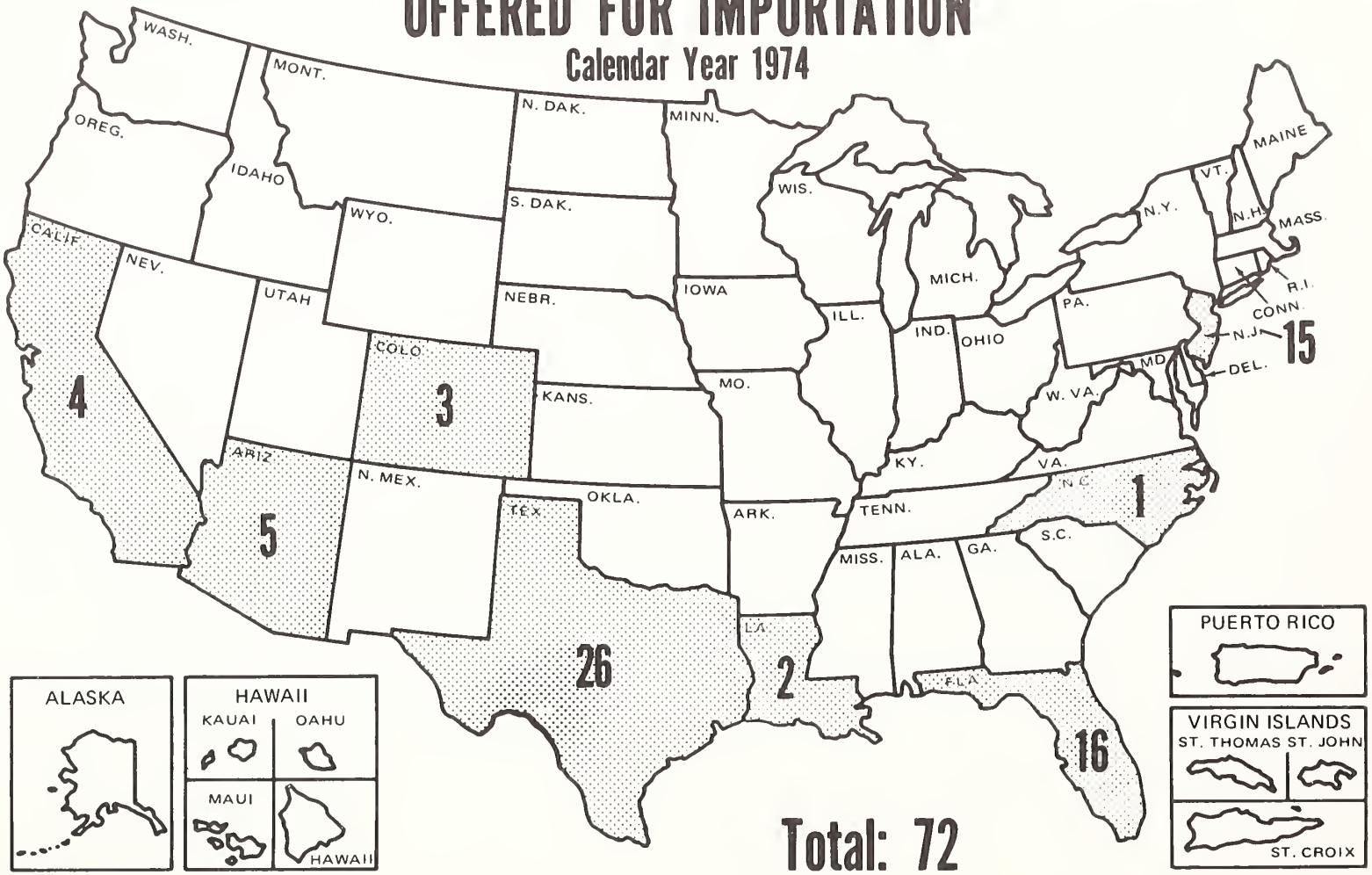
ANH FORM 5-55 MAY 1971 — REPLACES AOE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

Key to Species

v *Amblyomma variegatum*

TICK COLLECTIONS FROM ANIMALS AND PRODUCTS OFFERED FOR IMPORTATION

Calendar Year 1974



REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1974

HOST: TICKS FOUND ON ANIMALS & PRODUCTS OFFERED FOR ENTRY INTO THE UNITED STATES

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CALIFORNICUM	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM	DERMACENTOR VARIABILIS (BANKS)	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES CONEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	72		1			8		7	4	3	10		1			1		1					1	8	3	8	16
ARIZONA																											
Nogales	1										1BO																
Phoenix	4					1LZ1T[b] 2T[a]																					
CALIFORNIA																											
Los Angeles	3					1EH[w]					1EK 1DH																
San Francisco	1					1IG[f]																					
COLORADO																											
Denver	3																									2AT[x] 1AT[p]	
FLORIDA																											
Miami	16																						1PM[r]				1SB[y]
LOUISIANA																											
New Orleans	2					1AT[g]																			1X		
NEW JERSEY																								1GM 1K 2HB 1BB	1BL	1WG[e] 1WG[m] 2Z[e]	2ZP 1HB	
Clifton	15									1Z[d]																	1LZ[o]
NORTH CAROLINA																											
Wilmington	1																	1BG[h]									
TEXAS																											
Brownsville	7		1BO			1BO		1BO	3BO															1BO			
Del Rio	1															1BO											
Eagle Pass	9							6BO	1BO	2BO																	
El Paso	7										6BO		1BO														
Presidio	2										1BO													1BO			

ANH FORM 5-55 MAY 1971 REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE USDA-ARS

Key to Host

AT	Animal Trophies	EK	Elk Hide	SB	Sunbird
BB	Bontbok	GM	Gemsbok	T	Tortoise
BG	Baggage	HB	Hartebeest	WG	White-tailed Gnu
BL	Blesbok	IG	Iguana	X	Inanimate object
BO	Bovine	K	Greater Kudu	Z	Zebra
DH	Deer Hide	LZ	Lizard		
EH	Elephant Hide	PM	Plant Material		

Key to Species

a	Amblyomma marmoreum	h	Haemaphysalis sp.
b	Amblyomma falsomarmoreum	m	Rhipicephalus evertsi mimeticus
d	Boophilus decoloratus	o	Aponomma exornatum
e	Rhipicephalus evertsi evertsi	p	Rhipicephalus pulchellus
f	Amblyomma dissimile	r	Ornithodoros rudis
g	Amblyomma gemma	w	Amblyomma tholloni
		x	Rhipicephalus appendiculatus
		y	Hyalomma sp.

Prepared by
Veterinary Services
Animal and Plant Health Inspection Service
UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Md. 20782